U.S. Department
of Transportation
Federal Aviation Administration

General Aviation Airworthiness Alerts

AC No. 43-16

ALERT NO. 224
MARCH 1997

Improve Reliability-Interchange Service Experience

CONTENTS

AIRCRAFT

HELICOPTERS

AGRICULTURAL AIRCRAFT

AMATEUR, SPORT, AND EXPERIMENTAL AIRCRAFT

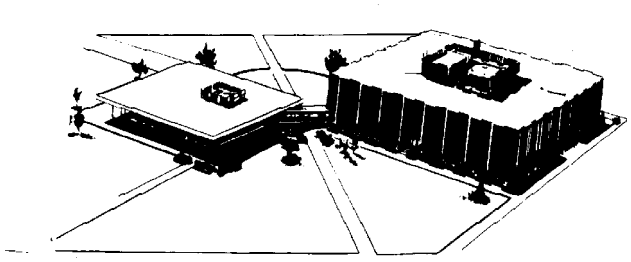
PROPELLERS AND POWERPLANTS

AIRWORTHINESS DIRECTIVES (AD'S)

AIR NOTES

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

GENERAL AVIATION AIRWORTHINESS ALERTS



FLIGHT STANDARDS SERVICE
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA;
ATTN: Maintenance Support Branch (AFS-640);
P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRCRAFT

AMERICAN CHAMPION

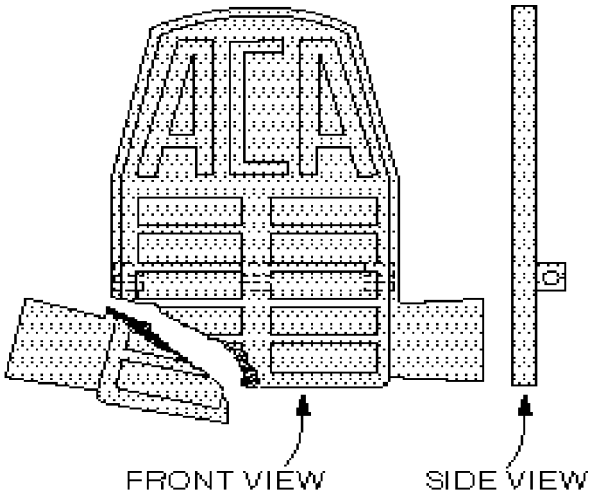
American Champion Model 8KCAB Super Decathlon (Bellanca)	**Rudder Pedal Failures 2720**

The owner of this aircraft reported a third rudder pedal failure in 298 hours of operation.

All of the rudder pedals (P/N 1537-1) failed at the lower left corner and were installed in the left forward position. The first failure occurred within 147 hours of operation, the second within 86 hours of operation, and the third within 65 hours of operation. This rudder pedal has three mounting pads on the back of the pedal through which the hinge pin passes. (Refer to the following illustration.)

The submitter did not offer a conclusion as to the cause of this defect and the short life of the pedals.

Part total times as previously stated.



BEECH

Beech Model 18 — **Raw Fuel In The Cockpit 2840**

After discovering the odor of fuel and raw fuel on the cockpit floor, the pilot made an immediate emergency landing. Fortunately, the fuel fumes did not find an ignition source before the aircraft was parked and evacuated.

An inspection revealed the aluminum fuel line to the fuel pressure gauge had chafed against a stringer until the wall thickness of the line was penetrated. The submitter recommended the routing, support, and clearance of all cockpit pressure lines be closely checked at every opportunity. This defect has been reported several times in the past, on this, as well as other make and model aircraft. It has resulted in personal injury and substantial aircraft damage.

Part total time not reported.

Beech Model C24R Sierra — **Main Landing Gear Actuator Failure 3233**

The pilot stated a loud abnormal “pop” was heard, followed by difficulty in maintaining directional control of the aircraft. The main landing gear “down-and-locked” light then illuminated, and the landing gear control handle was placed in the “down” position. A safe landing was made.

Troubleshooting the system revealed the left main landing gear actuator (P/N 169-380060-1) piston was broken. The submitter speculated this failure was caused by improper rigging of the landing gear. This actuator had been removed and replaced a short time prior to this occurrence. It was suggested the actuators and the landing gear system rigging be inspected at least annually.

Part total time-2,796 hours.

Beech Model F33 Bonanza — **Spar Carry Through Structure Cracks 5714**

A submitter stated finding 16 aircraft with wing spar carry-through structural cracks.

These aircraft were outside the serial number range, and therefore not covered by Airworthiness Directive (AD) 95-04-03. These aircraft were used in a flight school environment which may have contributed to the spar carry-through cracks. However, this is a significant number of occurrences, and the information has been sent to the responsible FAA aircraft certification office for possible AD revision action. This defect may also affect other Bonanza models listed in AD 95-04-03. This information is provided to make all Bonanza operators aware of the possibility of defects in the wing carry-through structure. The operating times on these 16 aircraft ranged from 4,857 hours to 8,544 hours.

Part total times as previously stated.

Beech Model G35 Bonanza — **Defective Flexible Plumbing 2800/3242**

All of the flexible fuel and brake hoses were found defective during an annual inspection.

This has been a longstanding problem and has been well-documented in many different aviation publications. It has occurred on all makes and models of aircraft using this type plumbing. Flexible aircraft plumbing is not intended to, nor should it be expected to, last 15, 20, 25 years or longer. It is hidden away in the aircraft structure and is very often neglected until it fails. If failure occurs at a critical time during flight, it may lead to personal injury and/or damage to the aircraft. It is suggested that during scheduled inspections, all flexible plumbing be thoroughly checked for condition and serviceability. When moved from its normal position, it should not be rigid, stiff, or brittle.

The submitter of this report stated: “I think a time limit should be placed on these items.” In

fact, most if not all, aviation installations of flexible plumbing are covered by a life limit established by the aircraft manufacturer and/or the hose manufacturer. It is critical that these life limits be complied with to ensure continued airworthiness of the aircraft.

Part total time-5,325 hours.

Beech Model K35 Bonanza — **Light Dimmer Rheostat/Transistor Failure 3310**

All four of the lighting dimmer rheostat/ transistor assemblies were found inoperative during an annual inspection.

The wiring to these controls was checked and found in serviceable condition. The potting compound, forming each of the four assemblies, had melted and dripped down onto the cockpit floor. The submitter speculated this was caused by "excessive heat during normal operation." It was stated this poses a safety hazard, and these assemblies should be replaced with a unit which will handle the electrical load and dissipate heat effectively. Some of the "older" potting compounds used for aircraft electrical installations have been found to break down and liquefy under conditions of age and heat. The newer potting compounds, now used in aviation, have been shown to endure the operating environment to which they are subjected.

Part total time not reported.

Beech Model A-36 Bonanza — **Propeller Governor Defect 6122**

It was reported that the engine would not develop full takeoff power (RPM).

An operational test of the system disclosed the RPM indication at full throttle was only 2,100. An inspection of the propeller system revealed the speed lever shaft was loose, and the plastic end housing was cracked all the way around its base. This was a McCauley propeller governor Model C29003-G/T23. It is recommended this housing, as well as the governor installation and linkage, be closely inspected at every opportunity.

Part total time-1,436 hours.

Beech Model 58P Baron — **Wheel Brake Failure 3242**

The pilot reported the right main landing gear strut "bottomed out" during landing, and the right wheel brake failed.

An inspection disclosed the fitting (P/N AN837-4D) on the wheel brake cylinder was cracked. Also, it was found that when the main landing gear strut was fully compressed, it made contact with the gear door link assembly (P/N 35-805056-16) with sufficient force to cause the brake cylinder fitting to fail. The submitter recommended that all 58 Series Barons with Cleveland brakes (30-93) be inspected for proper clearance in the area previously described.

Part total time-1,699 hours.

Beech Model B60 Duke — **Cabin Heater Failure 2140**

The Janitrol Model B3040 heater was reported inoperative, and the cabin smelled of smoke.

An investigation disclosed the cabin ventilation blower was also inoperative. The submitter speculated this caused an overtemperature condition in the heater. When the overtemperature switch tripped, instead of opening the 5 amp heat fuse, the 10 watt, 3 ohm resistor burned and opened the circuit. This resistor being open prohibited normal function of the overtemperature protection circuit. The heater was shut down by the pilot, and no further damaged occurred. Apparently, the resistor burned before the fuse opened.

Part total time not reported.

Beech Model C90A King Air | **Cabin Smoke And Fuel Fumes 2820**

The flightcrew reported the cabin and cockpit filled with smoke and fuel fumes during takeoff. The air-conditioning packs were shut off, and the smoke and fumes dissipated. After a safe landing, the aircraft was delivered to maintenance.

An investigation revealed the left fuel purge tank check valve (P/N 101-389011-65) was contaminated. After replacement of the check valve, a test flight revealed no other discrepancies. It was recommended these check valves be added to the 12-month purge tank filter inspection for all King Air models.

Part total time-1,313 hours.

Beech Model 300 Super King Air | **Engine Exhaust Crack 7810**

The right engine inboard exhaust stack (P/N 101-950017-1) was found cracked during a scheduled inspection.

The exhaust stack crack was approximately 10 inches long and ran parallel and adjacent to the horizontal weld seam on the forward side. The submitter stated this was the second new exhaust stack that had failed in 78 hours of operation. It was recommended that all operators check for this condition at every opportunity, especially just after a new part is installed.

Part total time not reported.

CESSNA

Cessna Model 152 Aerobat | **Carburetor Heat Valve Security 7322**

An article concerning this subject was published in the December 1996 edition of this publication. A reader responded to this article and expressed his concerns and opinions regarding this subject.

> "This seems to be a continuous problem which has been propagated by installing screws or aluminum rivets as a field repair. The carburetor heat valve plate and shaft is produced as an assembly (P/N 0450070-5), and the valve plate is installed on the shaft by Cessna using "stainless steel" (SS) rivets. Since it is an assembly, replacement rivets are not specified in the manufacturer's part manual (figure 62). It is necessary to contact Cessna to get the specifications for these rivets and then special order them. As everyone knows, SS rivets are not easily set, and the location of this installation makes it a much more difficult task to properly set the rivets. To install Number 6 screws requires enlarging the holes in the shaft to .136 inch. If a one-eighth inch screw is used, the diameter of the screw shank (minus the amount lost for the threads) is much less than the rivet installation. It should be obvious that SS rivets are substantially stronger than aluminum rivets. In any case, these installations are weaker than the original SS rivet installation.
>
> Aircraft owners and operators sometimes become upset when these facts are presented to them. This has been carried to the extent of "finding someone who will sign it off." Some people do not want to spend the extra money and time for replacement with a factory assembled part or SS rivets. This puts you, as a maintenance technician, to a test of your integrity. Do you give the customer a letter describing the defect, make a log book entry of this information, or "knuckle under" to the economic pressure of losing a customer? It's your choice; however, I personally would rather have an irate customer than one who was no longer around to complain!"

Our thanks to the reader who submitted this supporting and clarifying information of the previous article.

Cessna Model 172N Engine Textron Lycoming Model O-320H2AD Skyhawk

Carburetor Malfunction 7322

The pilot reported an engine power loss of 50 percent was experienced during a local flight. A safe landing was made at the departure airport.

The Precision Airmotive carburetor (P/N 10-5135) discharge tube assembly (P/N 229-164) was found broken during an inspection. The discharge tube assembly had been ingested into the engine. The submitter speculated this caused solid particles of combustion material to be dislodged which fouled the spark plugs. It is very important to conduct a visual inspection of the discharge tube assembly for security using the procedures and tools referenced in the Precision Airmotive Manual. This carburetor has been superseded by a new carburetor (P/N 10-5217).

Part total time not reported.

Cessna Model 172RG Cutlass

Main Landing Gear Failures 3230

Two separate reports stating failure of the same part were received. One incident involved failure of the right main landing gear to extend and lock and the other involved a like failure of the left main gear. Both incidents resulted in "gear-up" landings.

All attempts to achieve a "down-and-locked" indication were futile. One of the incidents occurred during a training flight with multiple "touch-and-go" landings. At the time of failure, the respective brake was abnormally soft and spongy. In both cases, an investigation disclosed the main landing gear pivot assembly had sheared at the base of the splined surface. Evidently, the pivot assembly has been improved as there are two different part numbers (P/N's 2441100-9 new number and 2441100-1 old number) listed by the manufacturer. It would be wise for owners, operators, and maintenance technicians of these aircraft to comply with all of the manufacturer's service information concerning this defect. It is also recommended this area be given special attention during scheduled inspections.

One failure occurred at 1,611 operating hours and the other occurred at 5,062 operating hours.

Cessna Model 177B Cardinal

Wing Attachment Fitting Wear 5342

Movement between the left wing and the center wing attachment fitting was discovered during an annual inspection.

The center wing spar carry-through structure (P/N 1710703) is attached to the wing by pins. The amount of movement was measured at .0035 inch. The submitter stated there is no written manufacturer data for the maximum allowable wear at the wing-to-fuselage joints. It would be wise to give this area special attention during scheduled inspections.

Part total time-2,609 hours.

Cessna Model 182B Skylane

Defective Landing Gear Attachment 3211

One of the main landing gear "U-bolt" nuts was found loose during an annual inspection.

The right rear was loose and further investigation disclosed a pre-existing crack in the "U bolt" which had allowed it to stretch. This leg of the "U bolt" was cracked through approximately 60 percent of its diameter. The crack was located three threads from the shank end of the threads, and this area was adjacent to the location of the bottom of the nut when it was installed. The submitter did not offer a cause for this defect; however, overtorque of this leg of the "U bolt" seems a likely cause.

Part total time-3,278 hours.

Cessna Model 182P Skylane — **Wing Flap Indication Cable Damage 2751**

The wing flap indicator cable was found frayed during a 100-hour inspection.

The damaged section of the flap indicator cable (P/N 0510105-231) was located just aft of the forward pulley under the floor and could be seen with the flaps in the full "down" position. With the flaps in the full "up" position, the cable became excessively "slack," and the frayed portion was observed contacting the forward side of the cockpit floorboard hole through which it passed. This hole is inside the center pedestal, and the forward side of the hole displayed signs of chafing. The submitter suggested that the flap indicator cable be checked for chafing at this location through the entire range of flap travel.

Part total time-3,390 hours.

Cessna Model 310R — **Fuel Line Leakage 2820**

Fuel stain was noticed on the left fuel crossfeed line during an annual inspection.

The fuel stain was in the area where the fuel crossfeed line (P/N 5200106-206) passed through the cabin at the main spar. This area is visible only with the upholstery removed from the cabin interior. Considerable labor was required to remove and replace this fuel line. When the fuel line was removed, several "pinholes" were found to penetrate the wall thickness of the line. These "pinholes" were verified by a pressure test of the line. The submitter stated this damage was caused by corrosion. There was no mention of fuel fumes in the cabin. This area should be checked under pressure at every opportunity, especially on high time or older aircraft.

Part total time-6,716 hours.

Cessna Model 402C Businessliner — **Wing Doubler Crack 5730**

A lower internal doubler (rib cap) was found cracked on the left wing during a scheduled inspection.

The crack was located at Wing Station 106.79 and was approximately 1.5 inches long. It appeared the crack originated at the aft side of the landing gear door hinge cutout. The adjacent lower wing skin was also cracked in the same location. An inspection of the right wing at the same location disclosed a similar defect. The submitter did not offer a cause for this defect; however, due to the high number of operating hours, metal fatigue and/or corrosion may have been the most important factors. It is suggested this area be given close attention during scheduled inspections.

Part total time-10,800 hours.

Cessna Model 550 Citation — **Deice System Defect 3010**

The flightcrew reported the "surface deice" indicator light in the cockpit did not illuminate when the deice system boots inflated.

An investigation revealed the pressure switches (P/N 1106P55) were defective. The submitter speculated the switches failed due to water contamination from exposure to the weather. It was suggested the manufacturer consider installing switches in a position which would minimize their exposure to water.

Part total time-9,148 hours.

Cessna Model S550 Citation — **Defective Toilet 2540**

A leak in the toilet unit was discovered while cleaning the aircraft.

Further inspection disclosed the toilet (P/N 17000-017) was leaking from the tank unit (P/N 17000-79) which had been improperly repaired. The toilet maintenance manual does not permit sealing of the tank unit. The tank unit should be replaced if found leaking. Toilet leakage has caused severe structural corrosion damage to the aircraft. The toilet should be replaced at the first sign of leakage.

Part total time-7,804 hours.

PIPER

Piper
Model PA 28-140
Cherokee

Flexible Fuel Plumbing Defect
2820

All of the flexible fuel plumbing was found defective when maintenance in the fuel tank area was conducted.

The fuel vent hoses (P/N's 63913-193 and 63913-194) and the fuel supply hoses at the fuel tank outlet were found "dry-rotted, very hard, and brittle." The markings on the fuel supply hoses indicated they had been manufactured in 1972. Even though there was no leakage from these lines, they held the potential for failure at any time.

This type of report continues to come in at an alarming rate, even after all of the publicity this subject has received in the past. All operators and maintenance personnel are urged to comply with the life limits established for these hoses by the aircraft and/or the hose manufacturer. Let's try to put "prevention" back in preventive maintenance! Common sense dictates the necessity for special attention to the life limits of these hoses.

Part total time-3,017 hours.

Piper
Model PA 28-181
Archer

Wing Walk Area Cracks
5730

Multiple cracks were found on the forward wing walk panel during a scheduled inspection.

The cracks were on the bottom of the forward wing walk panel (P/N 62061-02) and were located at the inboard and outboard ends of the panel corrugations. This area is very difficult to properly inspect. The submitter found these cracks by using his hand and dragging his fingernails across the cracked area. It was stated this was the sixth like aircraft with this defect found by the submitter. These aircraft were engaged in flight training and had been in service for approximately 5,000 hours of operation. Similar defects were found in the aft wing walk panel (P/N 62061-04).

Part total time-6,248 hours.

Piper
Model PA 28R-200
Arrow

Wing Ribs Cracked
5712

While complying with Airworthiness Directive (AD) 95-20-07, cracks were found in an adjacent wing rib This rib was not covered by the AD. (The AD requires inspection of the side brace stud).

The ribs (P/N's 78475-004 left and 78475-005 right), located at Wing Station 49.25, were cracked in the lower portion of the radius of forward flange. The side brace stud bracket assembly mounts on top of these rib flanges, making inspection of this area impossible with this bracket installed. The same condition was found on both wings. It appeared the cracks originated at the bottom edge of the flange radii and extended upward approximately 1 inch.

Part total time-7,407 hours.

Piper Model PA 28R-201 Arrow — **Missing Stiffener 5313**

During a landing gear retraction test, buckling of the skin in the area of the nose landing gear wheel well was noted.

Further investigation disclosed a stiffener (P/N 67972-02) was missing from the nose gear wheel well. There was no evidence that the stiffener had ever been installed. The technical data indicated this aircraft, by serial number, should have the stiffener installed. This operator found one additional aircraft in their fleet with the stiffener missing.

The manufacturers Service letter (SL) number 832, dated January 25, 1978, addresses this subject and makes available a wheel well stiffener kit (P/N 763-805V). SL 832 states: "The possibility exists when jacking up the aircraft under certain loading conditions that buckling may occur in the firewall when the forward jacking pad is utilized. To alleviate this condition a wheel well stiffener kit has been developed that when installed will provide additional reinforcement of the wheel well area." It is suggested that all operators of like aircraft conduct a one-time inspection for the serial number applicability of SL 832 and the presence of the subject stiffener.

Part total time-2,616 hours.

Piper Model PA 32-300 Cherokee Six — **Aileron Hinge Crack 5751**

The left outboard aileron hinge bracket (P/N 62372-01) was found broken during an annual inspection.

The hinge bracket was cracked completely through at the spar side. This defect was located in the radius area of the bracket adjacent to the mounting fastener holes. This is an area subjected to stress loads imposed by high wind gust on the parking ramp and operational stress during violent or sudden movement of the flight controls. Close attention should be given to this area during scheduled inspections.

Part total time-3,586 hours.

Piper Model PA 34-200 Seneca — **Fuel Line Damage 2820**

The main fuel lines (P/N's 95153-27 left and 95153-28 right) were found severely chafed during other related maintenance.

Both fuel lines were chafed through approximately 90 percent of their wall thickness. The lines were chafing against a cabin heat duct (P/N 63633-91) in the aft nacelle of each engine. Proper inspection of this area requires removal of the aft nacelle top panel, and the use of a flashlight and mirror to examine the aft outboard corner. (This is where the fuel line passes under the cabin heat duct.) If chafing is found, the fuel line should be replaced, if necessary, or repositioned to provide clearance, and should have chafe protection installed.

Part total time not reported.

Piper Model PA 34-200T Seneca — **Defective Nose Landing Gear Steering 3251**

The nose landing gear steering system was found damaged during an annual inspection.

When the two bolts (P/N AN4-7A) used to attach the nose steering channel were removed for inspection, one bolt was cracked through approximately 75 percent of the shank diameter, and the other bolt was bent. It was the submitter's opinion that this damage was the result of exceeding the towing limits during ground movement of the aircraft.

Part total time-2,923 hours.

Piper **Fuel Pump Failure**
Model PA 34-200T **2822**
Seneca

It was reported that the left engine fuel pump would not work in the "low" position.

An inspection disclosed the fuel pump would not work on the "low" setting and was noisy in the "high" setting. High resistance in the pump motor was found while troubleshooting this problem. It was believed the resistor, which is used to control the high and low settings, failed. When the fuel pump was removed and shaken, a "clunking" sound was heard. The fuel pump was disassembled, fuel was found in the motor, and the field winding was loose.

Needless to say, this condition presented a very hazardous situation which had the potential of causing a catastrophic event. Any fuel pump anomaly should be immediately and thoroughly investigated.

Part total time-5,305 hours.

Piper **Nose Gear Steering**
Model PA 34-220T **Failure**
Seneca **3251**

The pilot heard a loud and abnormal "banging" sound while taxiing from the parking ramp to the runway. The "banging" seemed to come from the nose landing gear. The pilot continued to the end of the runway, and a takeoff was made. The landing gear was not retracted because the pilot noticed in the "nose gear position mirror" that the nose gear wheel was turned 90 degrees to the aircraft. A safe landing was made without the aid of nose gear steering, and the aircraft was recovered from the runway.

An investigation revealed the structural channel (P/N 95061-28) had several cracks on both sides at the aft end. These cracks allowed the nose gear steering ball to exit the channel. This disabled the nose gear steering function. It would seem that a prudent pilot would have returned to the parking ramp when the "banging" noise was heard rather than placing the aircraft and its occupants at risk.

Part total time-5,310 hours.

Piper **Elevator Structural**
Model PA 42-1000 **Damage**
Cheyenne 400LS **5520**

Three cracks were found in the elevator skin after the paint was removed from the elevator using a chemical stripper.

The cracks were located adjacent to the channel used to mount the elevator counterweight and ran in an aft direction. Two more cracks were found in the skin at the stringer aft of the channel. Further inspection through the access panel revealed the stringer was broken. It appears the elevator counterweight imposes great stress, at the point where it is mounted, during strong and gusty wind conditions and possibly during extreme flight conditions. This area deserves special attention during scheduled inspections.

Part total time not reported.

SOCATA

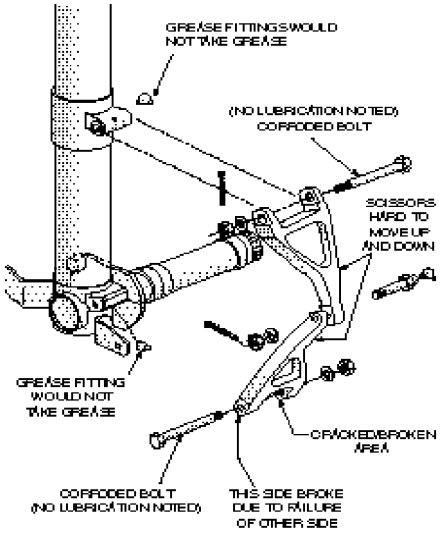
Socata **Main Landing Gear**
Model TB-9 **Failure**
Tampico **3210**

The left main landing gear wheel skidded during landing, causing the aircraft to turn left and slide to a stop. There were no injuries, and the aircraft was recovered from the runway.

An inspection revealed the left main landing gear scissors (P/N TB1041033000) had broken, allowing the wheel to turn sideways. The scissors broke on the lower half, adjacent to the strut attachment point. It appeared the fracture was the result of a pre-existing crack on the outboard side of the scissors fitting. The attachment pins (which hold the scissors) were severely corroded, and there was no evidence

of lubrication. Also, the grease fitting would not accept grease, and the scissors were extremely difficult to move. The submitter speculated this caused excessive stress on the scissors assembly, and led to this failure. (Refer to the following illustration.)

Part total time not reported.

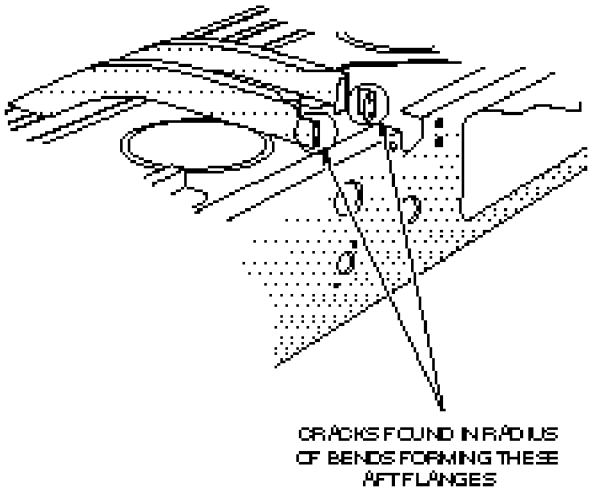


Socata **Flight Control Yoke**
Model T-9 **Defect**
Tampico **2701**

Both the left and right flight control yoke assemblies were found cracked during a scheduled inspection. Three separate reports on like aircraft were received stating the same defect.

The cracks were located in the bend radii of the aft flange support halves (P/N's TB10 23012100 and TB10 2301201). (Refer to the following illustration.) One side of the flange was severed, and the other side was very close to failure. These cracks are impossible to see without lifting the pilot's instrument panel. It was the submitter's opinion that this damage was caused by the transfer of wind gust loads from the control lock assembly.

Part total time-3,470 hours. The other two occurrences were at 2,885 hours and 2,970 hours.



HELICOPTERS

AEROSPATIALE

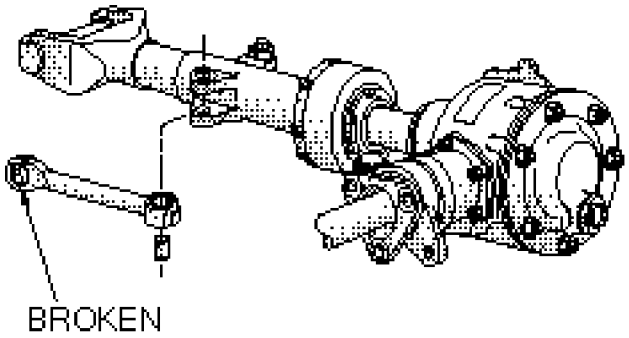
Aerospatiale **Tail Rotor Pitch**
Model AS 350B2 **Control Rod Failure**
Ecureuil **6711**

The helicopter crashed into an offshore platform in the Gulf of Mexico after experiencing a high frequency vibration and loss of tail rotor effectiveness.

One of the tail rotor pitch control rods (P/N 350A33-2145-00 or -01) was found broken during an investigation. The spherical bearing installed in that control rod displayed excessive wear. (Refer to the following illustration.) There are two part number control rods eligible for installation on this aircraft, and the exact part number installed was not known. At the time of this report, it was not known if the bearing or the control

rod failed first; however, it was speculated that the worn bearing set up an abnormal vibration which caused the tail rotor pitch control rod to fail.

Part total time-1,815 hours.



BELL

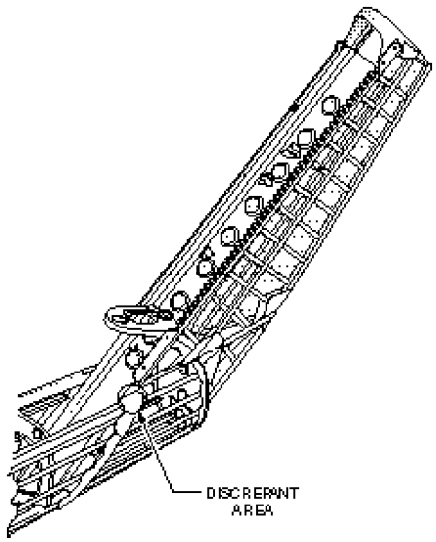
Bell Models 204B, 205A, 205A-1, 205B and UH-1

Vertical Fin Failure During External Load Operations 5500

Information for the following article was furnished by the National Transportation Safety Board (NTSB) and the FAA's Rotorcraft Certification Directorate (ASW-110) located in Fort Worth, Texas. (The following article has been printed as it was received.)

> As the result of a noninjury aircraft accident, the FAA and the NTSB have discovered a structural deficiency in the vertical fin of the helicopter models previously mentioned. This deficiency may lead to structural failure and/or separation of the vertical fin. Metallurgical examinations have revealed the vertical fin forward spar may be subject to failure through the Number 1 rivet hole. The failures appear to result from high cycle fatigue which is consistent with short cycle heavy lift operations. The number of cycles (defined as maximum power applications) were not available.
>
> The helicopter involved in this accident had been fitted with the latest design vertical fin spar, which was installed during manufacture. While definitive numbers cannot be determined, initial calculations suggest the aluminum vertical fin spar has an ultimate life of approximately 200,000 heavy lift, maximum power cycles. Any damage to rivet holes during tailboom repair, or evidence of working rivets has been demonstrated to further reduce the ultimate life of the spar. Heavy external lift at gross weight or above, "snatching" loads off the ground, applying full right pedal to unload the tail rotor to achieve additional main rotor lift, and jerking loads airborne, all contribute to shorter ultimate life of the antitorque structure.

Airworthiness Directive (AD) 71-21-02 previously addressed this subject on Models 205A and 205A-1 and further AD action is contemplated. The FAA recommends that operators pay special attention to the vertical fin spar cap and inspect the discrepant area before the first flight of each day until more effective corrective action is available. (Refer to the following illustration.)



Bell
Models 222 B, U, and 230

Door Lock Caution Lights Flicker
5210

The following article was submitted by the FAA's Rotorcraft Certification Office (ASW-170) located in Fort Worth, Texas.

The applicable aircraft models and serial numbers referenced in the following Technical Bulletin Numbers (TBN) follow:

Bell Model 222 (S/N 47006 through 47089) and Bell Model 222B (S/N 47131 through 47156), TBN 222-96-155.

Bell Model 222U (S/N 47501 through 47574), TBN 222U-96-83. Bell Model 230 (S/N 23001 through 23038).

All of the above TBN's were dated August 30, 1996.

These TBN's advised of reports that the passenger door lock caution lights will flicker during flight. The intermittent caution light flicker is a result of fuselage flexing common to normal flight regimes. The TBN's give information on installing an improved switch which will eliminate any further occurrence of this problem.

Bell
Models UH-1, AH-1S, AH-1G, AH-1J, AH1Q, 205A-1, 204B, 205B, 212, and 412

Tail Rotor Drive Shaft Hanger Bearings
6510

The following article was submitted by the FAA's Rotorcraft Certification Office (ASW-170) located in Fort Worth, Texas. (This article is printed as it was received.)

UNAPPROVED TAIL ROTOR DRIVE SHAFT HANGER BEARINGS

Bell Helicopter Textron, Inc., (hereafter referred to as Bell Helicopter) has recently learned that a number of tail rotor drive shaft hanger bearings were made available to operators identified by invalid Bell Helicopter Part Numbers 204-040-623-105/-107. These bearings were sold by the bearing manufacturer to the Canadian Government, but could possibly have been delivered to other users as well. The subject bearings were procured as direct replacement parts for those supplied by Bell Helicopter under P/N 204-040-623-003 or -005.

The Bell Helicopter "APPROVED AND QUALIFIED" part number bearings have a two-piece, spot-welded cage. The INVALID part number bearings have a two-piece riveted cage. The bearings having the riveted cages do not meet source control requirements, and have not undergone Bell Helicopter qualification testing. Bearings not meeting these requirements are unapproved parts and are not authorized for use by Bell Helicopter.

Bell Helicopter has issued Operations Safety Notice OSN GEN-96-29 which addresses this problem. Upon request, copies of this notice may be obtained from: Bell Helicopter Textron, Inc.; P.O. Box 482; Fort Worth, TX 76101.

SIKORSKY

Sikorsky
Model S76A
Mark II

Improperly Threaded Tail Rotor Cable
6720

While attempting to install a new tail rotor cable, the technician discovered the threaded "male" end of the cable was threaded improperly. The cable was threaded with left-hand threads instead of the required right-hand threads. The operator found nine other cables in their stock that were threaded incorrectly. The cables were all purchased directly from an authorized Sikorsky parts distributor and included Sikorsky packaging.

Part total time-"0" hours.

Sikorsky Model S-76C — **Ruptured Heater Duct Elbow 2140**

A customer complained of hot air exiting the baggage compartment when baggage was being unloaded in cold weather.

An inspection of the baggage compartment was initiated, and it was discovered that the center overhead baggage shroud C-4 heater duct elbow (P/N BWT13671-1) had ruptured allowing hot air from the heater to enter the baggage compartment.

Part total time-126 hours.

AGRICULTURAL AIRCRAFT

PIPER

Piper Model PA 25 Pawnee — **Wheel Bolt Failure 3246**

One of the wheel half bolts was found broken when the left wheel cover was removed during an annual inspection.

The nut and threaded end of the bolt were found inside the wheel cover, and the head end of the bolt was missing. Approximately 1 year prior, the tires were installed, and the submitter speculated the broken bolt was "overtorqued" at that time. It was stated these bolts (5/16 by 24) are easily "overtorqued" and care should be taken to avoid excessive torque.

Part total time-239 hours.

SCHWEIZER

Schweizer Model G-164A Ag Cat — **Wheel Brake Failure 3242**

The pilot reported that while turning the aircraft, using the left wheel brake, the pedal suddenly tipped forward beyond the normal position. The left brake was no longer effective.

An investigation disclosed the three screws used to attach the left brake master cylinder had "ripped out" of the master cylinder base. This disconnected the master cylinder and made the left brake ineffective. This condition can also affect the rudder operation because when the pedal "flips" forward, rudder pedal travel is limited. The submitter stated the three screws mounting the master cylinder are safety wired when installed, and their proper tightness ensures security of the cylinder.

Part total time-4,300 hours.

AMATEUR, SPORT, AND EXPERIMENTAL AIRCRAFT

AEROSPORT

Aerosport Model II — **Magneto Failure 7414**

A rebuilt magneto (Bendix S-4RN-21) on a Lycoming O-320-E2A engine failed after only 7 hours of operation.

At high RPM, the left magneto drop indicated a loss of 200 RPM. At lower RPM's, there was no indication of a drop in RPM's. The engine felt rough in flight and missed at 1,700 RPM's and higher .

The submitter stated that after extensive troubleshooting, the left magneto was found to be the source of the problem. The magneto was disassembled, and all new parts were installed (coil, points, and capacitor). It was also discovered during disassembly that the capacitor (P/N ES10-51676) had loose internal parts. After replacement of these parts and reassembly, the magneto performed correctly.

Part total time-7 hours.

GLASTAR

Glastar Model III — **Rudder Skin Concaved 5542**

At an airspeed of approximately 120 miles per hour, the rudder would "walk," and at higher airspeeds, the "walking" action became more violent.

An inspection of the rudder revealed the rudder skin was slightly concaved. The rudder was removed, and the trailing edge was squeezed in a press brake. This eliminated the concave shape. A flight test of up to 150 miles per hour determined that the problem no longer existed. The submitter stated the construction manual calls for an inspection of this condition and details the corrective procedure to be taken.

Part total time-26 hours.

HARALSON PERCEPTOR

Haralson Perceptor — **Fuel Header Not Vented 2810**

An incident occurred when the fuel header tank did not vent properly.

This caused the fuel header tank to develop negative pressurization and starve the engine of fuel. A fuel vent was properly installed, which solved the problem.

Part total time not reported.

SX-300

SX-300 — **Cracked Hydraulic Actuator 3233**

The pilot discovered, during flight, that the right main landing gear would not lock in the "retracted" or "extended" position. The right main landing gear collapsed during landing, and caused the aircraft to skid off the runway.

The submitter stated the hydraulic actuator rod-end had apparently begun to crack; however, it went undetected until it failed during the last takeoff. The submitter recommended that, in the future, frequent and more thorough inspections be performed in this area.

Part total time not reported.

TAILWIND

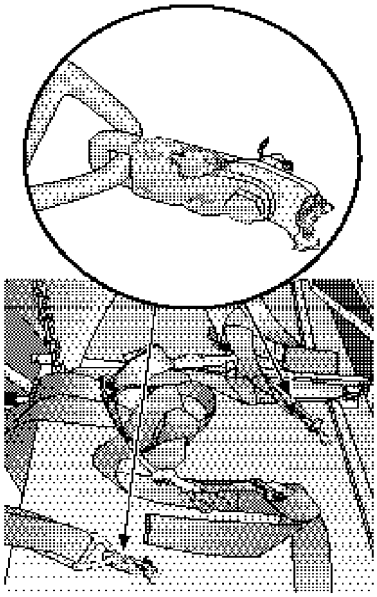
Tailwind Model W-8 — **Occupant Restraint Failure 2560**

The aircraft crashed due to an engine failure. During impact, the occupant restraint system failed causing the occupant to impact the instrument panel.

While inspecting the aircraft, the restraint system attachment point to the airframe was found broken. The available evidence indicated the attachment lugs broke at the point where they were welded to the airframe due to inadequate or improper welding technique. (Refer to the following illustration.) It was recommended that amateur aircraft builders ensure that all welding procedures

are done properly. If you are not proficient with welding processes, you should hire a professional.

Part total time-83 hours.



ZENITH

Zenith
Model CH-701
Engine Model Rotax 582

Broken Rotary Valve Gear
8520

The rotary valve gear (P/N 935-730) oil sump fasteners failed, which allowed the oil sump to drop below the engine crankshaft. Lack of lubrication from the sump caused the brass rotary valve to "shear off" its teeth, which resulted in the rotary valve slipping and becoming "out of time" with the engine. Also, this condition caused engine roughness and a power loss.

Part total time-414 hours.

ZODIAC

Zodiac
Model CH-600

Separated Nicopress Sleeve
2730

A 28-3M Nicopress sleeve was incorrectly installed, which caused the elevator cable to separate, thereby, disabling elevator control.

This sleeve is located at the forward end of the cable next to the control stick. The submitter recommended that flight control cable connections be installed using two sleeves (like those found on most manufactured aircraft).

Part total time not reported.

PROPELLERS AND POWERPLANTS

McCAULEY

McCauley
Model 2A36C23-P-E

Airworthiness Directive Clarification
6114

A safety recommendation has been submitted by Mr. Lyle Alexander, an Airworthiness Inspector with the FAA's Flight Standards District Office (FSDO) located in Scottsdale, Arizona. (This article has been printed as it was received from the Scottsdale FSDO.)

> This safety recommendation (number not yet assigned) was submitted due to catastrophic propeller hub failure at the point of rotation during the takeoff roll. This propeller was installed on a Beech, Model N35 aircraft. The pilot lost control, the aircraft veered off the runway, flipped over, and was destroyed. The three aircraft occupants suffered only minor injuries.

Had this occurred after the aircraft became airborne, the personal injuries would surely have been more severe.

An examination revealed the propeller failed at the hub, forward of the attachment flange around the hub circumference. This caused the propeller to instantaneously separate from the aircraft.

While researching the aircraft records, it was determined that there was no compliance with Airworthiness Directive (AD) 89-26-08. The investigator also determined this AD was not applicable to this particular propeller. The applicability section of the AD states that the AD applies to McCauley propeller Models 2A36C23/84B-0. A representative of the manufacturer was contacted and offered the following statement: "AD 89-26-08 does apply to the failed propeller." It was explained the "84B-0" at the end of the model number, as written in the AD, refers to the blade design.

A copy of AD 89-26-08, along with the propeller model designation 2A36C23-P-E, was presented to several Certified Aircraft Mechanics, Inspection Authorization (IA's), and FAA Airworthiness Inspectors. Without knowing the circumstances behind this, they were asked if the AD was applicable to this propeller model number. All said, without exception, the AD was not applicable because of the "/84B0" designation at the end of the model number. This aircraft had undergone five annual inspections, completed by two IA's and a Certified Repair Station since the effective date of the AD. When asked why this AD had not been complied with, they all stated it was not applicable by model number.

It has been determined that this Airworthiness Directive 89-26-08, does definitely apply to all McCauley propeller Models 2A36C23 (without regard to subsequent figures, numerals, or letters) and 2A36C82 (without regard to subsequent figures, numerals, or letters).

This ambiguity in the AD may have been the cause for noncompliance of the AD and the subsequent propeller failure. There may be many other like propellers in service which do not have this AD complied with for the same reason. All owners, operators, and maintenance personnel are strongly encouraged to review the aircraft records and take appropriate action to ensure compliance. If there is any doubt concerning the applicability of any AD, contact the FAA aircraft certification office or the manufacturer prior to releasing the aircraft for service. The address for the FAA aircraft certification office is listed in the AD. Also, the AD refers to McCauley Service Letter (SL) 1989-5 which is more clearly written as to the applicability. It is believed that numerous unsafe propellers are being operated because of the model number disparity.

This AD may be applicable, but is not limited to, propellers installed on Beech Model 33 and 35 series aircraft.

AIRWORTHINESS DIRECTIVES (AD'S)

ISSUED IN JANUARY 1997

(For Small Aircraft, Rotorcraft, and Engines)

97-01-02	Cessna 525; MLG trunnion pins.
97-01-01	Piper PA24, PA28R, PA30, PA32R, PA34, and PA39 Series; main gear sidebrace studs.
97-02-02	Fairchild SA26, SA226, and SA227 Series; pitch control.

97-01-13	Cessna 100, 200, 300, and 400 Series; hose wrap.
97-02-01	Piper PA-31T2; rerouting landing gear emergency extension line.
97-03-01	Raytheon (Beech) 1900D; right-hand exhaust stack.
97-03-02	Sailplanes: Glasflugel H301, H301B, Libelle 201B, Club, Libelle 205, Kestrel; control surface weight.
97-01-05	Williams FJ44-1A turbofan engines; disk blade retention.
97-01-03	Textron Lycoming Reciprocating Engines; piston pin removal.
96-26-01	General Electric Engines CT7 Series Turboprop Engines; gas generator turbines.
96-25-20	Hamilton Standard 14RF and 14RF Series, and Model 6/5500/F Propellers; critical control components.
97-01-06	Bell restricted category HH-1K, TH-1F, TH-1L, UH-1A, UH-1B, UH-1E, UH-1F, UH-1H, UH-1L, and UH-1P helicopters; tail rotor slider.
97-02-14	Robinson R22 Helicopters; throttle governor.
97-02-15	Robinson R44 Helicopters; RPM warning unit.

AIR NOTES

SUN 'N FUN '97

The 1997 SUN 'N FUN EAA International Aviation Convention/Airshow/Fly-In is scheduled for April 5 through April 12, 1997, at Lakeland Linder Airport in Lakeland, Florida.

The FAA Safety Center auditorium will host forums and seminars throughout the airshow. There will also be presentations from most of the major aviation organizations which will cover the entire gamut of general aviation activities and interests. The staff of this publication will occupy a booth in the FAA Safety Center. We will have literature and information concerning the Service Difficulty Reporting (SDR) Program and the services and products available to the aviation public. We look forward to another excellent event and hope to see you.

ALERTS ON LINE

We have received several requests to make the information contained in AC 43-16, General Aviation Airworthiness Alerts, available electronically. Therefore, this publication is now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You may directly access the FedWorld BBS at telephone number (703) 321-3339. To access this publication through the Internet, use the following address.

http://www.fedworld.gov/ftp.htm

This will open the "FedWorld File Transfer Protocol Search And Retrieve Service" screen. Page down to the heading "Federal Aviation Administration" and select "FAA-ASI". The file names will begin with "ALT", followed by three characters for the month, followed by two digits for the year (e.g. "ALTJUN96.TXT"). The extension "TXT" indicates the file is viewable on the screen and also available to download.

Beginning July 1996, we are using the Adobe Acrobat software program format to upload this monthly publication. This change is necessary to include the illustrations which are associated with various articles. The file

names will still begin with “ALT”, followed by three characters for the month, followed by two digits for the year; however, the extension will be “PDF” (e.g. “ALTJUL96.PDF”). The extension “PDF” indicates it will be necessary to download the files for viewing. The Adobe Acrobat Viewer is available for download from the Internet (free of charge) and will allow the files to be read.

You may still access the “TXT” extension for issues of this publication prior to July 1996.

Also, available at this address are the Service Difficulty Reports which may be of interest.

The Regulatory Support Division (AFS-600) has established a “HomePage” on the Internet, through which the same information is available. The address for the AFS-600 “HomePage” is:

http://www.mmac.jccbi.gov/afs/afs600

Also, this address has a large quantity of other information available. There are “hot buttons” to take you to other locations and sites where FAA Flight Standards Service information is available. If you have any questions, our “E-mail” address follows.

Other requests have been received indicating a need to make the staff of this publication more available to our readers. To provide greater and more flexible access for you to offer information and ask questions, you may contact us by using any of the following methods.

Editor: Phil Lomax, AFS-640

Telephone Number: (405) 954-6487

FAX Number: (405) 954-4570 or (405) 954-4748

Internet E mail address:
ga-alerts@mmacmail.jccbi.gov

Mailing Address:
FAA
ATTN: AFS-640 (Phil Lomax)
P.O. Box 25082
Oklahoma City, OK 73125-5029

We hope this will allow you to contact us by a means which will be convenient and save some of your time. We welcome the submission of aircraft maintenance information via any form or format. This publication provides an opportunity for you to inform the general aviation community of the problems you have encountered. The Service Difficulty Reporting (SDR) program also brings the problems to the attention of those who are able to resolve the problems. Your participation in the SDR program is vital so accurate maintenance information is available to the general aviation community.

FAA FORM 8010-4, MALFUNCTION OR DEFECT REPORT

For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

You may complete the form, fold, staple, and return it to the address printed on the form. (No postage is required.)

SUBSCRIPTION REQUEST FORM

For your convenience, a Subscription Request Form for AC 43-16, General Aviation Airworthiness Alerts, is printed in every issue.

If you wish to be placed on the distribution list, complete the form, and return it, in a stamped envelope, to the address shown on the form.

OMB No. 2120-0003

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MALFUNCTION OR DEFECT REPORT

OPER. Control No.
ATA Code
1. A/C Reg. No. N-

Enter pertinent data:	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (of component) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (Assembly that includes part)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and/or corrective actions to prevent recurrence.)

Optional Information:

Check a box below, if this report is related to an aircraft

☐ Accident; Date _____ ☐ Incident; Date _____

DISTRICT OFFICE	OPERATOR DESIGNATOR
OTHER	
COMMUTER	
FAA	
U.P.S.	
AIR TAXI	
U.S.CH.	
OPER.	SUBMITTED BY:
REP. AIRL.	TELEPHONE NUMBER: ( ) —

FAA Form 8010-4 (10-88) SUPERSEDES PREVIOUS EDITIONS

Use this space for continuation of Block 8 (*if required*).

U.S. Department
of Transportation

Federal Aviation Administration

Flight Standards Service
Maintenance Support Branch
P.O. Box 25082
Oklahoma City, OK 73125

AFS-640

Official Business
Penalty for Private Use $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 12438 WASHINGTON, D.C.

Federal Aviation Administration
AFS-640 (Alerts)
P.O. Box 25082
Oklahoma City, OK 73125-5029

SUBSCRIPTION REQUEST FORM

ADVISORY CIRCULAR (AC) 43-16, GENERAL AVIATION AIRWORTHINESS ALERTS

Please use this request to subscribe to AC 43-16 or to change your address if you are presently on the mailing list. Once your name has been entered, you will continue to receive this publication until you request your name be removed or a copy is returned because of an incorrect address.

Because this mailing list is independent of other FAA mailing lists, it is necessary that you notify us when your address changes. (Our address is on the following subscription request.) If you are presently receiving this publication it is **NOT** necessary to send another subscription request. The following subscription request may be duplicated, as necessary. **TELEPHONE REQUESTS WILL ALSO BE ACCEPTED; THE TELEPHONE NUMBER IS (405) 954-6487. THE FAX NUMBERS ARE: (405) 954-4748 and/or (405) 954-4570.**

AC 43-16 SUBSCRIPTION REQUEST

If you would like to **BEGIN** receiving AC 43-16, or **CHANGE** your address, please complete the following:

PLEASE PRINT INFORMATION LEGIBLY, INCLUDE YOUR ZIP CODE, AND THE DATE OF YOUR REQUEST.

NAME: _____

ADDRESS: _____

_____

_____

ZIP CODE _____

DATE: _____

CIRCLE ONE OF THE FOLLOWING:

1. This is a **NEW** subscription.
2. This is an **ADDRESS CHANGE**.

SEND **ONLY ONE** SUBSCRIPTION REQUEST TO THE FOLLOWING ADDRESS:

FAA, Regulatory Support Division
ATTN: AFS-640 (Phil Lomax)
P.O. Box 25082
Oklahoma City, OK 73125-5029

If you require more than one copy of AC 43-16, it may be reproduced.

U.S.Department
of Transportation

Federal Aviation Administration

Maintenance Support Branch
ATTN: ALERTS, AFS-640
P.O. Box 25082
Oklahoma City, OK 73125-5029

AFS-640

Official Business
Penalty for Private Use $300

BULK MAIL
POSTAGE & FEES PAID
Federal Aviation
Administration
PERMIT No. G44